

AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

In the claims

Claim 1 (original): A method of controlling a data head for reading data from a data track on a magnetic tape in a magnetic tape drive, comprising:

determining signal quality for read data signals produced by a data head reading data from a data track; and

adjusting the position of the data head relative to the data track using the signal quality.

Claim 2 (original): The method of claim 1, wherein adjusting comprises:

performing a seek operation that includes changing the position of the data head and determining changes in the signal quality corresponding to the changes in data head position until a predetermined level of improvement in the signal quality is achieved.

Claim 3 (currently amended): The method of ~~claim 1~~ claim 2, wherein changing the position of the data head comprises:

stepping of the data head laterally across the data track.

Claim 4 (original): The method of claim 3, wherein performing the seek operation further comprises:

using the determined changes to determine direction and size of steps of the stepping.

Claim 5 (currently amended): The method of claim 4, wherein performing the seek operation further comprises:

comparing each of the determined changes to a lower threshold; and

~~comparing a current number of steps taken by the seek operation to a maximum number of steps.~~

Claim 6 (currently amended): The method of claim 5, wherein adjusting further comprises:
maintaining the data head at a current position without stepping when results of the comparison indicate that the determined change is below the lower threshold ~~and the current number of steps taken exceeds the maximum number of steps.~~

Claim 7 (original): The method of claim 6, wherein the lower threshold comprises a hysteresis value.

Claim 8 (original): The method of claim 6, wherein adjusting further comprises:
monitoring the signal quality while maintaining the data head at the current position to detect any changes in the signal quality greater than the lower threshold; and
if any changes greater than the lower threshold are detected, repeating performing the seek operation.

Claim 9 (original): The method of claim 6, wherein adjusting further comprises:
determining that the data head has been maintained at the current position without stepping for a period of time in excess of a predetermined maximum re-seek time threshold; and
repeating performing the seek operation.

Claim 10 (currently amended): The method of claim 1, wherein determining comprises:
obtaining the signal quality values from a read channel device.

Claim 11 (cancelled):

Claim 12 (original): The method of claim 1, wherein the signal quality comprises error values.

Claim 13 (original): The method of claim 12, wherein the error values are indicative of errors between observed values and ideal values for the read data.

Claim 14 (currently amended): An apparatus for controlling a data head to read data from a data track on a magnetic tape in a magnetic tape drive, comprising:
a ~~stored~~ computer program in memory ~~instituting the steps of~~ for:
determining signal quality for read data signals produced by a data head reading data from a data track; and
adjusting the position of the data head relative to the data track using the signal quality.

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Claim 15 (currently amended): A tape drive system comprising:
a data head structure to produce read data signals from data recorded on a data track of a tape;
a head stepper coupled to the data head structure;
a data channel unit to produce read data signal quality values from the read data signals; and
a servo controller coupled to the head stepper and the data channel unit, the servo ~~control~~ controller being configured to use the signal quality values to control adjustment of the position of the data head structure relative to the data track by the head stepper.

Claim 16 (new): The method of claim 4, wherein performing the seek operation further comprises:
comparing each of the determined changes to a lower threshold; and
comparing a current number of steps taken by the seek operation to a maximum number of steps.

Claim 17 (new): The method of claim 16, wherein adjusting further comprises:
maintaining the data head at a current position without stepping when results of the comparison indicate that the determined change is below the lower threshold and the current number of steps taken exceeds the maximum number of steps.

Claim 18 (new): The method of claim 1, wherein the signal quality relates to noise in the read data signals.

Claim 19 (new): The method of claim 1, wherein the read data signals do not include servo information.

Claim 20 (new): The method of claim 1, wherein adjusting comprises aligning the data head with the data track.

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Claim 21 (new): The apparatus of claim 14, wherein adjusting comprises:
performing a seek operation that includes changing the position of the data head and determining changes in the signal quality corresponding to the changes in data head position until a predetermined level of improvement in the signal quality is achieved.

Claim 22 (new): The apparatus of claim 21, wherein changing the position of the data head comprises:
stepping of the data head laterally across the data track.

Claim 23 (new): The method of claim 22, wherein performing the seek operation further comprises:
using the determined changes to determine direction and size of steps of the stepping.

Claim 24 (new): The method of claim 23, wherein performing the seek operation further comprises:
comparing each of the determined changes to a lower threshold.

Claim 25 (new): The apparatus of claim 23, wherein performing the seek operation further comprises:

comparing each of the determined changes to a lower threshold; and
comparing a current number of steps taken by the seek operation to a maximum number of steps.

Claim 26 (new): The apparatus of claim 25, wherein adjusting further comprises:
maintaining the data head at a current position without stepping when results of the comparison indicate that the determined change is below the lower threshold and the current number of steps taken exceeds the maximum number of steps.

3 Claim 27 (new): The apparatus of claim 24, wherein adjusting further comprises:
maintaining the data head at a current position without stepping when results of the comparison indicate that the determined change is below the lower threshold.

Claim 28 (new): The apparatus of claim 27, wherein the lower threshold comprises a hysteresis value.

Claim 29 (new): The apparatus of claim 27, wherein adjusting further comprises:
monitoring the signal quality while maintaining the data head at the current position to detect any changes in the signal quality greater than the lower threshold; and
if any changes greater than the lower threshold are detected, repeating performing the seek operation.

Claim 30 (new): The apparatus of claim 27, wherein adjusting further comprises:
determining that the data head has been maintained at the current position without stepping for a period of time in excess of a predetermined maximum re-seek time threshold; and
repeating performing the seek operation.

Claim 31 (new): The apparatus of claim 14, wherein determining comprises:
obtaining the signal quality from a read channel device.

Claim 32 (new): The apparatus of claim 14, wherein the signal quality comprises error values.

Claim 33 (new): The apparatus of claim 32, wherein the error values are indicative of errors between observed values and ideal values for the read data.

Claim 34 (new): The apparatus of claim 14, wherein the signal quality relates to noise in the read data signals.

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Claim 35 (new): The apparatus of claim 14, wherein the read data signals do not include servo information.

Claim 36 (new): The apparatus of claim 14, wherein adjusting comprises aligning the data head with the data track.

Claim 37 (new): The system of claim 15, wherein the signal quality values relate to noise in the read data signals.

Claim 38 (new): The system of claim 15, wherein the read data signals do not include servo information.

Claim 39 (new): The system of claim 15, wherein adjusting comprises aligning the data head structure with the data track.
